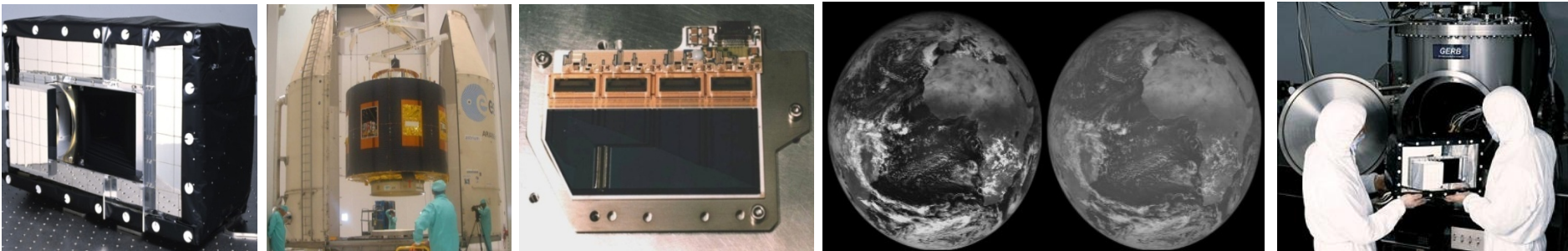
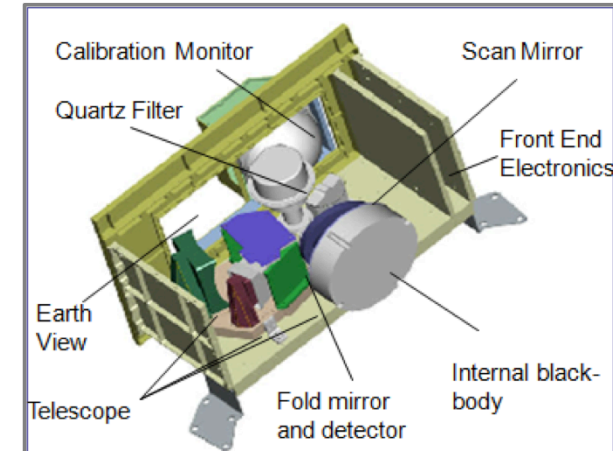
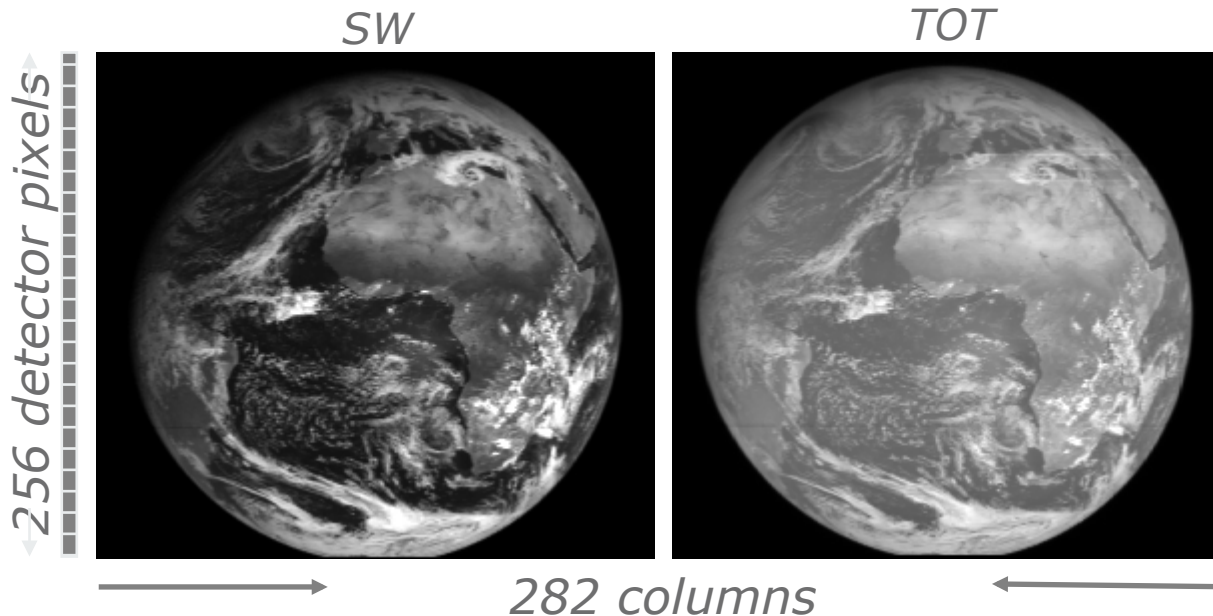


GERB Project status

H. Brindley and J. Russell



GERB Instrument / Operation



Waveband	Spectral range	Absolute accuracy
Shortwave (SW)	0.32 μm to 4.0 μm	<2.25 %
Longwave (by subtraction TOT-SW)	4.0 μm to >100 μm	<1.0 %

1st: GERB-2 Meteosat 8 03/2004-05/2007
(Indian Ocean from Oct 2016)

2nd: GERB-1 Meteosat 9 05/2007-01/2013

3rd: GERB-3 Meteosat 10 01/2013-02/2018

4th: GERB-4 Meteosat 11 02/2018 to date

The principal challenge

- GERB project employs 6 people (FTE) across three institutes (RAL, RMIB and Imperial College)

Most of this effort is spent on day-to-day activities:

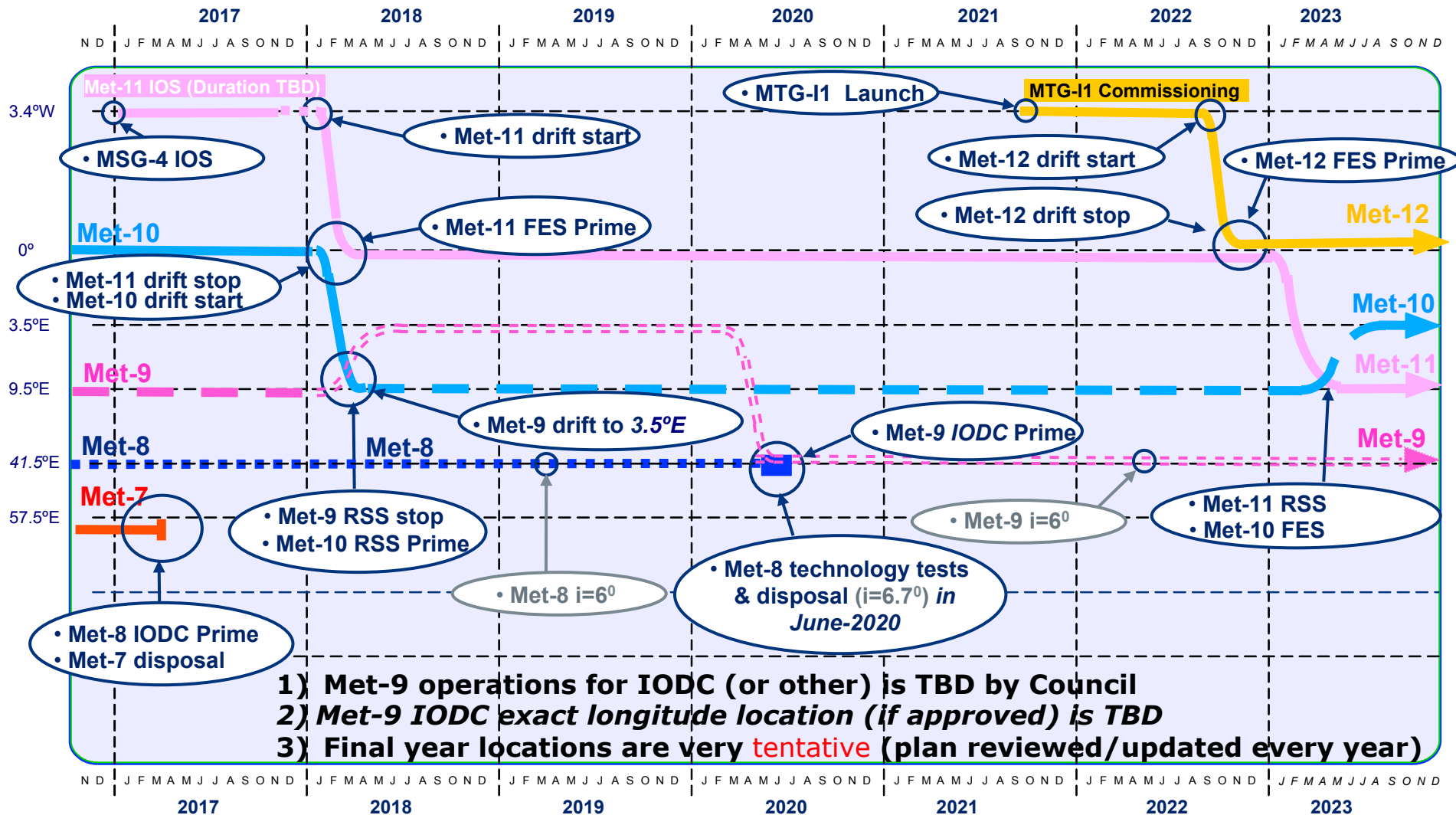
- Instrument commissioning, operations, health and commanding
- 24/7 receive and archive L-band data as GERB and SEVIRI headers, for level 0 products and NRT processing to GERB level 1.5 filtered radiances
- NRT processing to level 2, requiring full SEVIRI data

Additional tasks:

- Additional cal/val effort available after each instrument commissioning for 18 months
- No functionality to run multiple processing versions
- Minimal development effort to deal with additional (unforeseen) factors
- Increasingly large and unstable systems

Collaborative work with CERES/ScaraB MT teams actively encouraged

Meteosat status and forward planning (short-term)



GERB Status

MSG-1 METEOSAT-8 with GERB 2 (OP 41.5°)

Issues with (a) uneven mirror side degradation; (b) timing information during summer season. Potential solution identified: could be applied to data retrospectively

MSG-2 METEOSAT-9 with GERB 1 (OFF 3.5°)

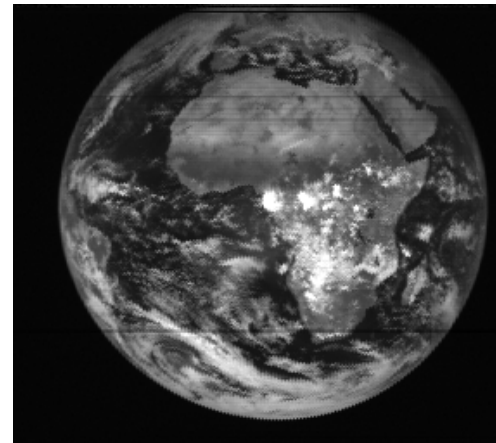
GERB 1 observations to Jan 2016: loss of mirror control. Almost declared 'dead' but mirror began running smoothly again in Oct 2017. Will be used periodically for cross-cals

MSG-3 METEOSAT-10 with GERB 3 (SAFE 9.5°)

GERB-3 suffered a mirror sticking event during April 2013, not recovered until April 2015. Long period of inactivity caused uneven mirror side degradation. Possible solution now identified.

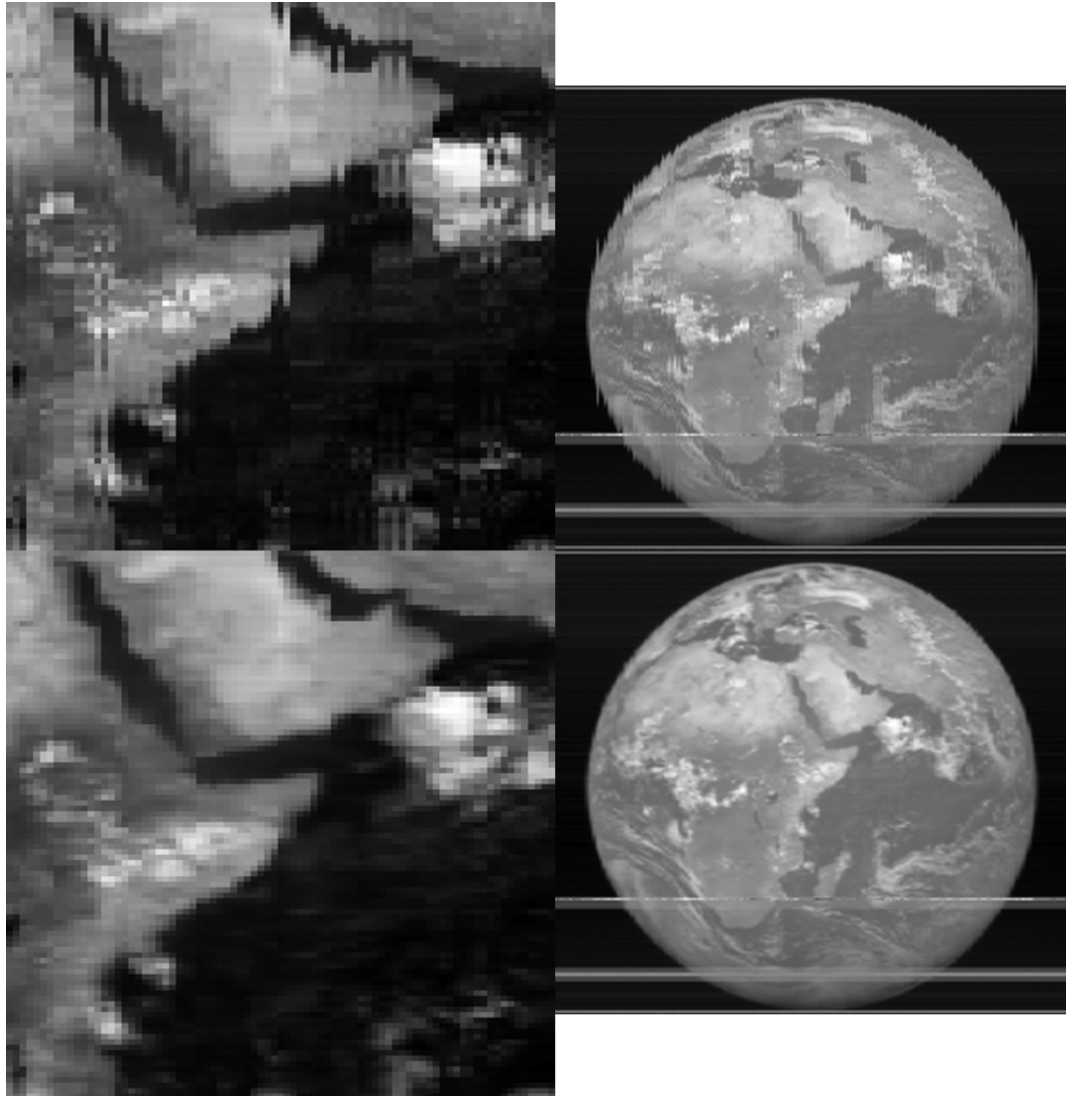
MSG-4 METEOSAT-11 with GERB 4 (OP 0.0°)

Operating SEVIRI FES and GERB NORMAL modes since April 2018
GERB calibration parameters still being refined but anticipate nrt release soon



Correcting the GERB-2 timing issue

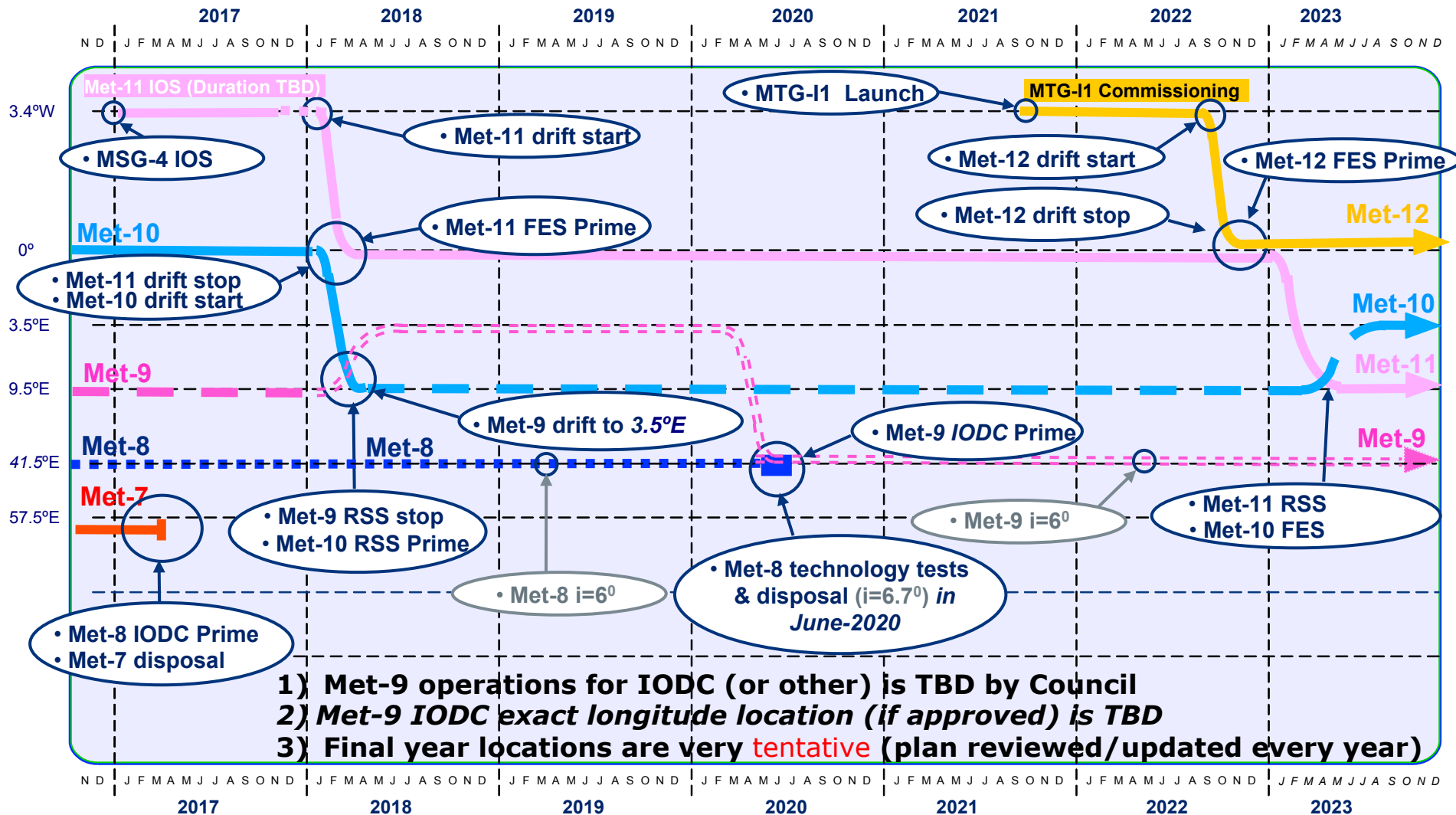
- Using the TSOL correction from the EUMETSAT orbital model we can adjust columns using average mirror speed.
- 2 x 282 scan – allows mirror sides to be processed separately
- Data is then re-gridded by interpolation to recover regular E-W pixel spacing.
- In the magnified sub satellite region shown the corrective effect on coastlines and cloud fields is obvious.



GERB Project progress

- Edition 1 filled HR data products
 - Now available on CEDA for download
- Obs4MIPS GERB diurnal monthly average product
 - Ready to press button when Obs4MIPs provides final product definitions
- Edition 2
 - Updates implemented in processing system (e.g. updated calibration and radiance to flux improvements)
 - Major hardware issues need to be resolved before processing and evaluation can begin
- Indian Ocean
 - Progress towards a solution – cost of operational implementation?
- GERB 3
 - 2015-18 data with mirror side differences
- GERB 4
 - Hope to be releasing nrt products later this year

Meteosat status and forward planning



MSG long-term planning



Estimated lifetimes:

Met-8 ($i=5.40^\circ$ as of 14/05/18)

- **June 2020** (if axial thrusters used) @ $i=6.7^\circ$
- Possibly defer to 2021 (if radial thrusters used)

Met-9 ($i=2.84^\circ$ as of 14/05/18)

- **October-2024** $i=8^\circ$

Met-10 ($i=0.94^\circ$ as of 14/05/18)

- **Sep-2030** $i=8^\circ$

Met-11 ($i=1.35^\circ$ as of 14/05/18)

- **Dec-2033** $i=8^\circ$

*All also dependent on
EUMETSAT funding for MSG
after MTG becomes operational*

EUMETSAT Meteosat Lifetime Review 2018 (MLR-2018)

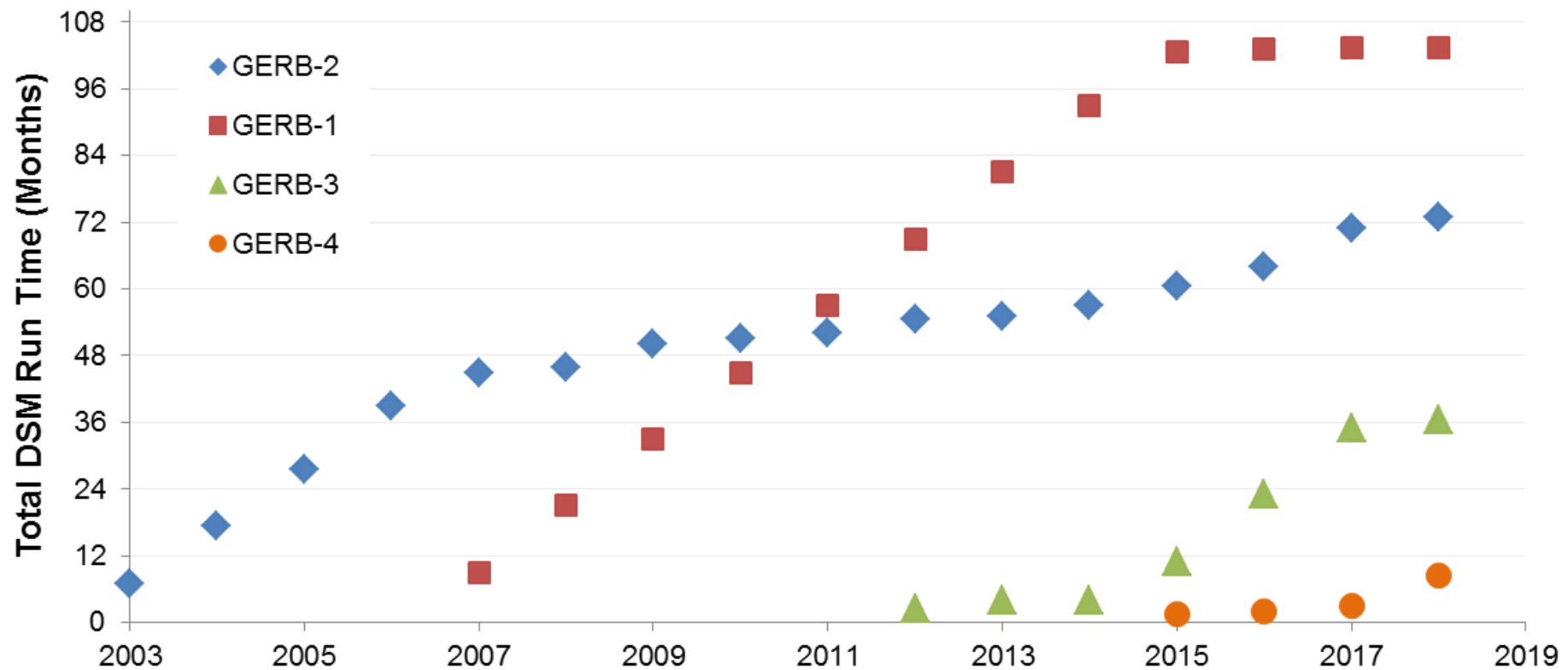
MLR-2018 likely in Oct/Nov-2018

Action to consider Met-8 end-of-life (summer-2020 or extend to 2021?)

Action to consider if should recommend Met-9 to IODC after Met-8

Initiated consideration of extending MSG program to 2030 to run in parallel with MTG

Implications for GERB instruments



Future Opportunities

Meteosat Third Generation (2021)

No dedicated ERB instrument on-board. Need to consider how experience with GERB can benefit estimates of broadband fluxes from FCI measurements. Co-location at 0° with GERB-4, possibly up to 12 months.

EarthCARE (2021)

ESA proposal for BBR validation using experience built up from GERB accepted. Project due to start next year.

CLARREO Pathfinder (2023)

Watching brief. If measurements are available they could be incredibly beneficial for GERB performance monitoring and to inform calibration updates

